

# USER'S MANUAL

**TwinFresh S1-50-2**  
**TwinFresh SA1-50-2**

**TwinFresh S1-50**  
**TwinFresh SA1-50**



## SINGLE-ROOM REVERSIBLE VENTILATOR



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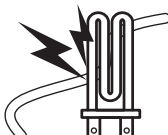
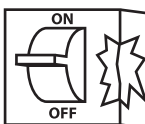

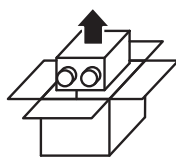

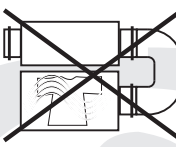
## SAFETY REQUIREMENTS

- Read carefully the user's manual prior to starting mounting and operation.
- While mounting and operating the unit consider the requirements of the present user's manual as well as requirements of all applicable local and national building and electrical codes and standards.
- Read carefully the warnings contained in the manual to make yourself aware of the safety rules!
- Non-compliance with the rules and precautions stated in the user's manual may result in a personal injury or the unit damage.
- Read the manual carefully and keep it as long as you use the product.
- In case of transferring operation of the unit to another person provide the user manual.



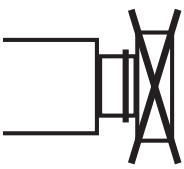
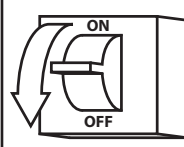
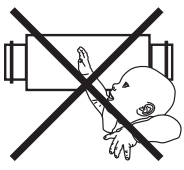

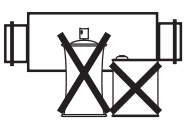
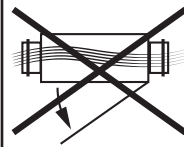
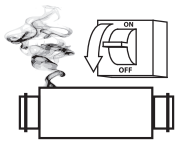

Symbol legend used in the manual:

	<b>WARNING!</b>
	<b>DO NOT!</b>

## MOUNTING SAFETY PRECAUTIONS

	Disconnect the unit from power supply before mounting and repair operations.		Do not operate the unit beyond the specified temperature range. Do not operate the unit in an aggressive and explosive medium.
	Keep heating and other devices away from the unit power cable.		Do not use damaged electric equipment and conductors for electric connections.
	Follow all applicable electrical safety rules while operating and mounting the unit.		Unpack the unit carefully.
	Unauthorized power cable length modification is not allowed. Do not bend and do not damage the power cable.		Use the unit for the purpose intended only.

# OPERATING SAFETY PRECAUTIONS

	Do not touch the speed controller or the control panel with wet hands! No maintenance is allowed with wet hands.		Do not rinse the unit under water. Protect the unit electric parts from water ingress.
	Do not block the air duct when the unit is on.		Disconnect the unit from power supply before maintenance.
	Do not let children operate the unit.		Do not damage the power cable while operating the unit. Do not put any objects on the power cable.
	Keep explosive and inflammable products away of the unit.		Do not open the operating unit.
	In case of unusual sounds, smoke disconnect the unit from power supply and contact the service centre.		Do not let air flow from the unit be directed to the open flame devices or candles.

## INTRODUCTION

This user's manual includes technical description, operation, installation and mounting guidelines, technical data for the single-room reversible ventilator TwinFresh S1-50, hereinafter referred as the unit.

## USE

The unit is designed to arrange permanent controllable air exchange in flats, cottages, hotels, cafes and other domestic and public premises. The unit is equipped with a ceramic heat exchanger that enables supply of fresh air due to extract air heat energy utilization.

The unit heat exchange efficiency reaches 91%.

The unit is designed for through-the-wall mounting. The unit is suitable for installation in the walls from 120 mm (4 3/4") up to 470 mm (18 1/2"), depending on the unit configuration.

The unit is rated for continuous operation.

Transported medium must not contain any flammable or explosive mixtures, evaporation of chemicals, coarse dust, soot and oil particles, sticky substances, fibrous materials, pathogens or any other harmful substances.



**THE UNIT IS NOT INTENDED TO BE USED BY CHILDREN, PHYSICALLY OR MENTALLY DISABLED PERSONS, PERSONS WITH SENSORY DISORDER, PERSONS WITH NO APPROPRIATE QUALIFICATION.**  
**ONLY QUALIFIED EXPERTS ARE ALLOWED TO OPERATE THE UNIT AFTER APPROPRIATE INSTRUCTION ABOUT ITS USE AND OPERATION.**  
**TAKE CARE THAT THE CHILDREN HAVE NO ACCESS TO THE VENTILATOR.**

## DELIVERY SET

	Unit	Connecting cable , 3 m Unitronic LIYY UL CSA 5xAWG/7 (5x0.25)	Control and power unit	User's manual	Packing box	Fasteners
TwinFresh S1-50	✓	✓	✗	✓	✓	✓
TwinFresh S1-50-2	✓	✓	✗	✓	✓	✓
TwinFresh SA1-50	✓	✓	✓	✓	✓	✓
TwinFresh SA1-50-2	✓	✓	✓	✓	✓	✓
TwinFresh SA1-50 (120 V / 60 Hz)	✓	✓	✓	✓	✓	✓
TwinFresh SA1-50-2 (120 V / 60 Hz)	✓	✓	✓	✓	✓	✓

## UNIT DESIGNATION KEY

**TwinFresh SX1-50 -X (XXX/XX)**

Power main parameters other than 230 V / 50 Hz

**Outer grille (hood) type**

- \_ metal outer hood for connection to air ducts 250-470 mm (9 13/16" - 18 1/2") long.
- 2 - tapered metal outer hood for connection to 120-300 mm (4 3/4" - 11 13/16") long air ducts.

**Air capacity [m<sup>3</sup>/h]****Control unit**

- \_ - no control unit included
- A - control unit included

**Rectangular connecting air duct****Unit designation**

TwinFresh – single-room reversible ventilator

## MAIN TECHNICAL PARAMETERS

The unit is designed for indoor application with the ambient temperature ranging from -20°C (-4 °F) up to +50°C (+122 °F) and relative humidity up to 80%.

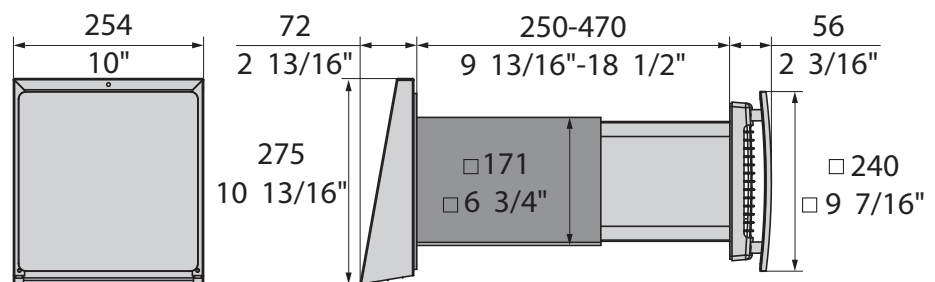
The unit does not require grounding.

Ingress Protection (IP) rating from solid objects and liquids IP 24.

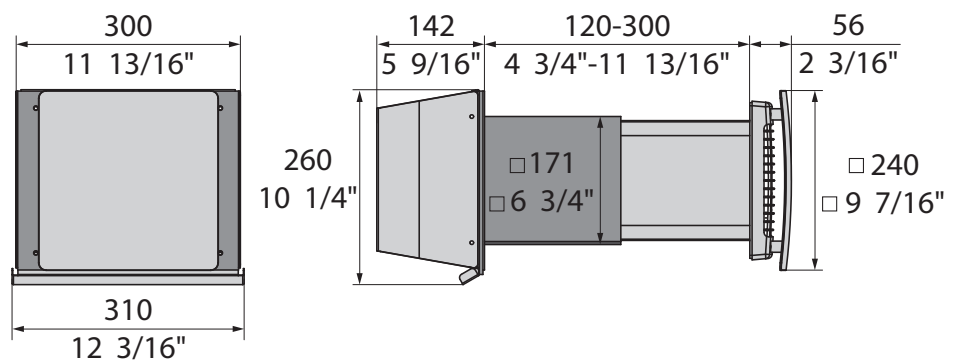
The unit design is regularly improved, so some models may slightly differ from those ones described in this manual.

## UNIT OVERALL DIMENSIONS

- TwinFresh S1-50
- TwinFresh SA1-50
- TwinFresh SA1-50 (120 V/60 Hz)



- TwinFresh S1-50-2
- TwinFresh SA1-50-2
- TwinFresh SA1-50-2 (120 V/60 Hz)



# UNIT TECHNICAL DATA

Operation mode	I	II
Voltage [V]	230 V / 50 Hz (120 V / 60 Hz)	
Total unit power [W]	1,4	3,0
Max. unit current [A]	0,25	0,28
Max. air capacity [m³/h] (CFM)	25 (14,7)	50 (29,4)
RPM [min⁻¹]	570	1100
Noise level, 3 m [dB(A)] (Sones)	22(0,5)	29(0,81)
Max. transported air temperature [°C] / (°F)	-20 (-4) up to +50 (+122)	
Heat recovery efficiency	up to 91%	
Heat exchanger type	Ceramic	

## DESIGN AND OPERATING LOGIC

The unit consists of the metal telescopic air duct with adjustable length regulated by position of the inner air duct (3) inside the outer air duct (2), the impeller (7), the ventilation grille (4) and the outer hood (1).

The filter (8) and the ceramic heat exchanger (6) are located inside the inner duct of the telescope.

The filter is designed to purify supply air and prevent foreign object ingress to the heat exchanger and the impeller.

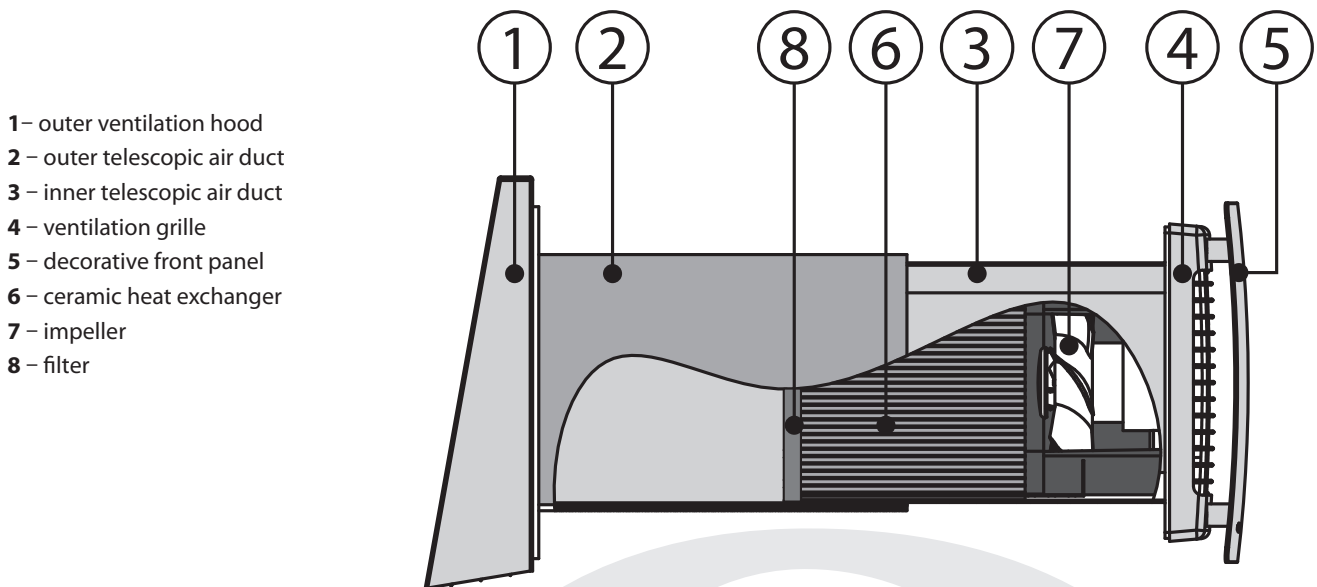
The heat exchanger provides utilization of extract air heat energy to supply air flow.

The ventilation unit and the heat exchanger are installed on the insulation material that is used as a sealer and a vibration absorber as well.

The ventilation grille (4) with the decorative front panel (5) must be installed on the inner side of the building.

The outer ventilation hood (1) is installed on the outer side of the building to prevent ingress of water and solid foreign objects.

## UNIT DESIGN



- 1 – outer ventilation hood
- 2 – outer telescopic air duct
- 3 – inner telescopic air duct
- 4 – ventilation grille
- 5 – decorative front panel
- 6 – ceramic heat exchanger
- 7 – impeller
- 8 – filter

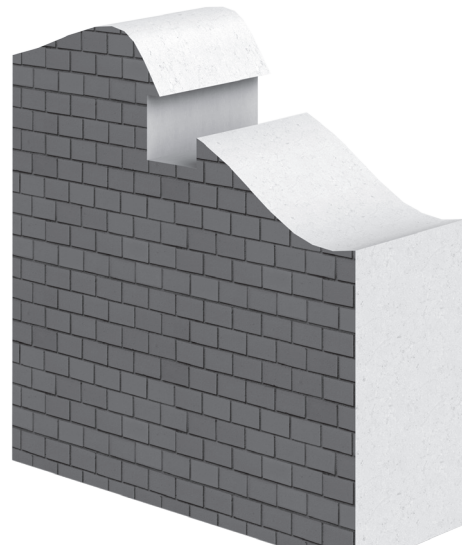
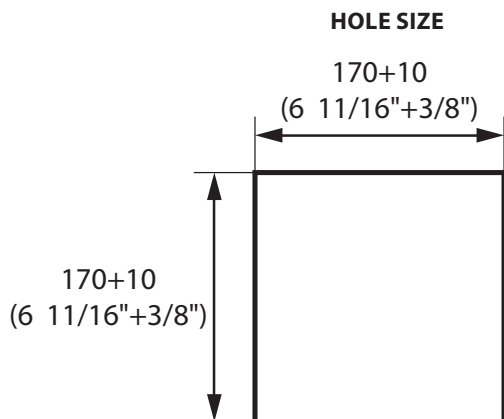
## MOUNTING AND SET-UP



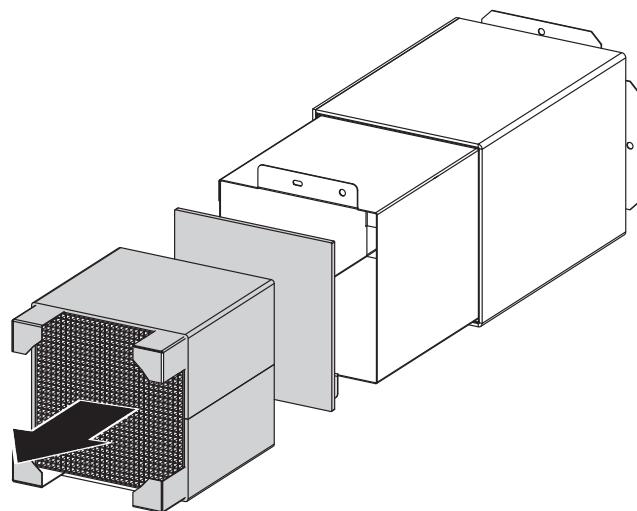
**INSTALLING AND MOUNTING MUST ONLY BE CARRIED OUT BY AUTHORISED PROFESSIONAL INSTALLERS. PLEASE READ THE MANUAL CAREFULLY BEFORE BEGINNING THE INSTALLATION.**

**1.** Prepare a through square hole in the wall for the unit mounting. For the hole dimension, refer to the figure below.

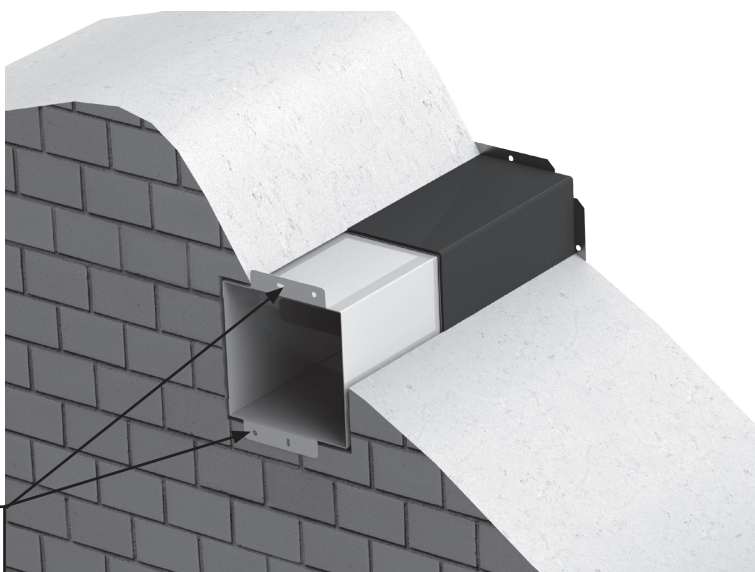
While preparing the holes provide a recess for the cable routing.



**2.** Remove the heat exchanger and the filter from the telescope inner duct.



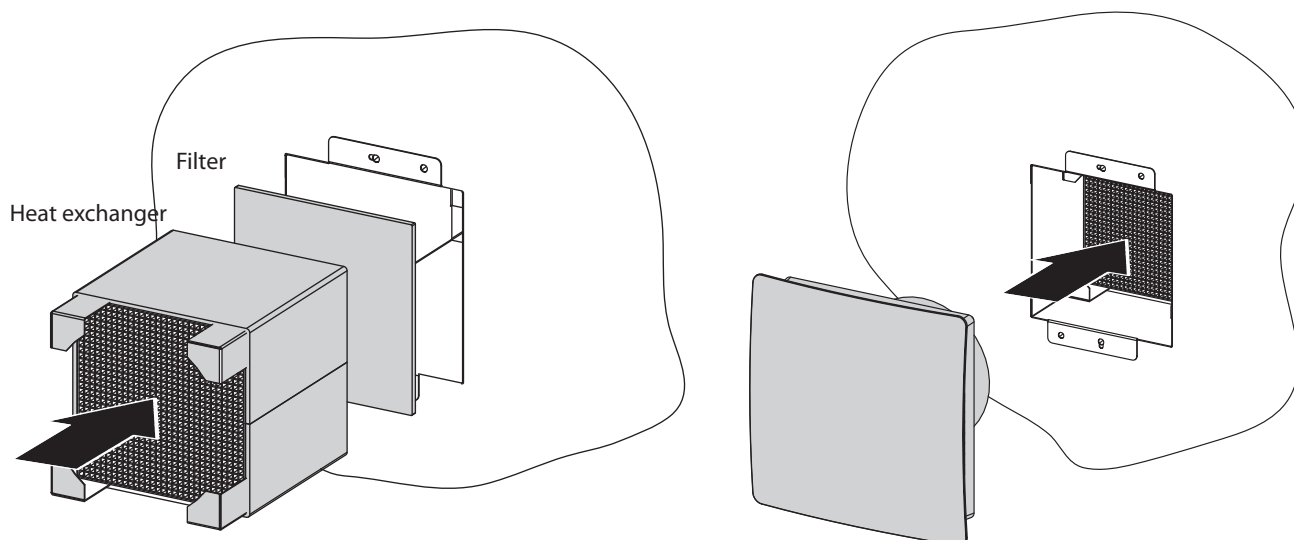
**3.** Install the telescope inside the wall and secure it with screws and dowels. Fill the gaps between the wall and the telescopic air duct with a mounting foam.





4. Re-install the filter and the heat exchanger inside the telescopic air duct.

Insert the ventilation unit on the rails and install the ventilation unit inside the air duct. Lean the ventilation unit against the telescopic air duct to fix it with magnets.



### OUTER HOOD MOUNTING

TwinFresh S1-50 TwinFresh SA1-50 TwinFresh SA1-50 (120V/60Hz)	TwinFresh S1-50-2 TwinFresh SA1-50-2 TwinFresh SA1-50-2 (120V/60Hz)
1. Mark the fastening holes for the outer ventilation hood and drill 40 mm holes for the dowels 6x40.	
<p>200 7 7/8"</p> <p>Ø6(1/4") 4 holes</p> <p>200 7 7/8"</p>	<p>246,4 9 11/16"</p> <p>Ø6(1/4") 4 holes</p> <p>193,5 7 5/8"</p> <p>Mark the holes with a master plate (included into the delivery).</p>
2. Insert the dowels 6x40 (included into the delivery) into the holes.	
3. Disassemble the outer ventilation hood to enable access to the fastening holes.	
<p>Take off the upper part of the ventilation hood.</p>	<p>Remove 5 screws and rake off the upper part of the ventilation hood.</p>

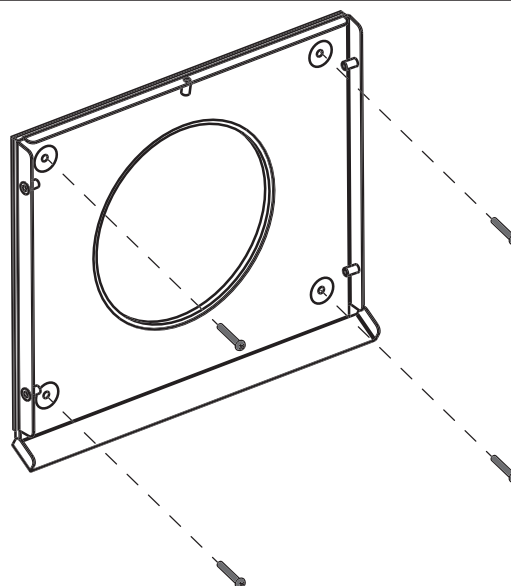
#### 4. Fix the back part of the ventilation unit on the wall.

Self-drilling screws

Screws

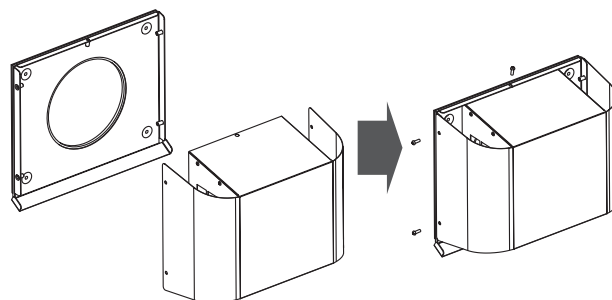
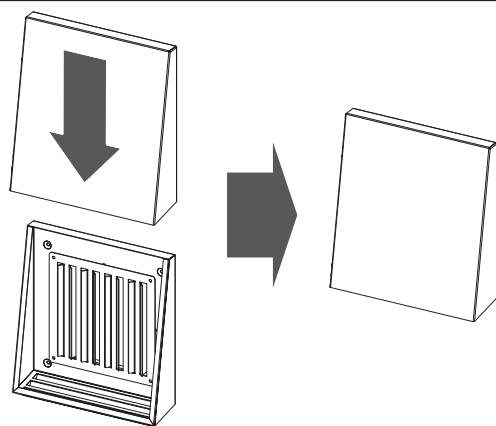
Self-drilling screws

- Fix the back part of the outer hood to the telescopic duct with M6 screws (included into the delivery).
- Fix the back part of the outer hood to the wall with the self-drilling screws 4x40 (included into the delivery).



- Fix the back part of the outer hood to the wall with the self-drilling screws 4x40 (included into the delivery).

#### 4. Mount the upper part of the outer hood.



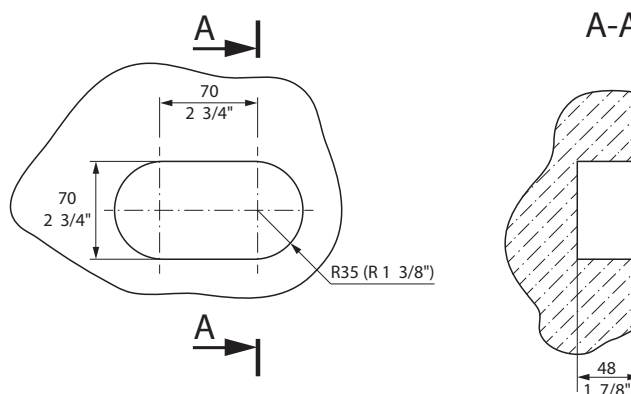
### CONTROL AND POWER UNIT

1. Prepare the recesses for mounting of the control and power unit.

Install a junction box into the recess.

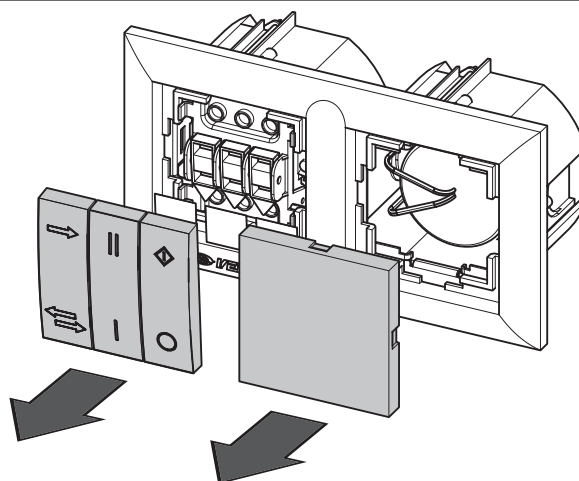
While mounting the control and power unit consider the supplied cable length.

A longer cable may be used. The recommended cable type is Unitronic LIYY UL CSA 5xAWG/7 (5x0.25).

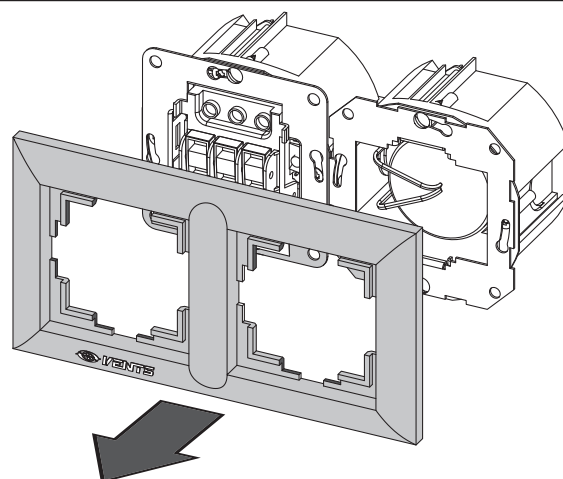


Recess marking for mounting of the control and power unit.

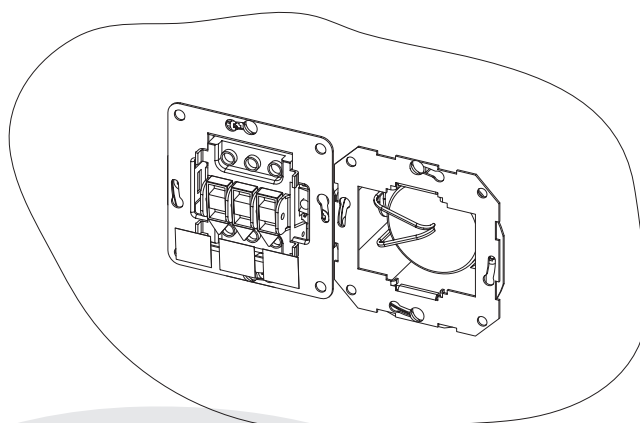
2. Uplift the buttons and the blind cover with a screwdriver and detach those from the control and power unit.



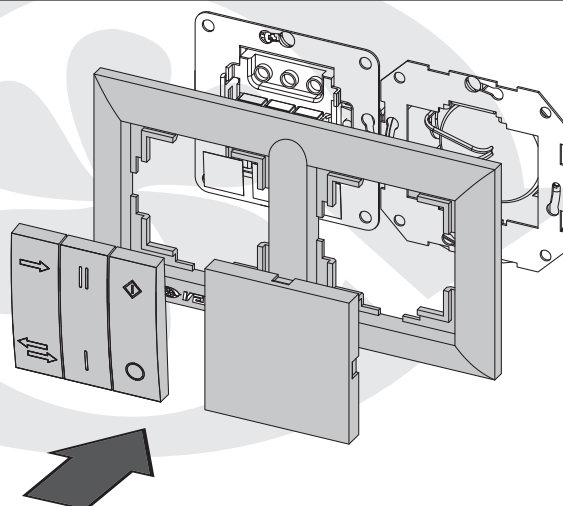
3. Press the latches to remove the control and power unit frame.



4. Install the control and power unit into the wall recess.



5. Install the frame, the buttons and the blind cover in the reverse order.



## CONNECTION AND CONTROL

The unit is controlled either with the KVR-T external control and power unit (included in the delivery set of the TwinFresh SA1 models with automation) or with the KVR control panel and TRF 220/12-12, TRF 220/12-40 transformer (special accessory).

The control and power unit enables to control set operation modes and consists of the control unit and transformer unit.

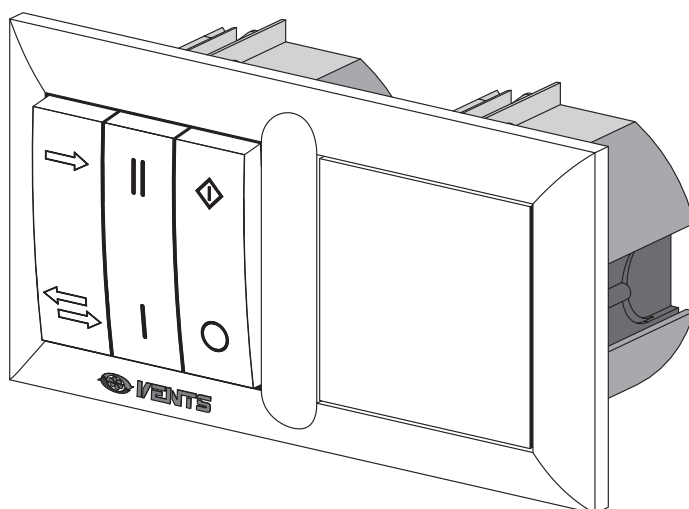
The unit is rated for connection to single-phase 230 V / 50 Hz or 120 V / 60 Hz depending on a transformer type.

Separate power supply must be provided both to the control and power unit and to the ventilator.

The control unit is a three-key switch with an integrated printed circuit board for installation into a standard junction box.

All electric connection to the control and power unit are performed with the socket connectors for mounting and servicing facilitation. Each mating part of the connector has a colour marking in compliance with marking on the circuit board to ensure correct and quick electric installation.

### CONTROL AND POWER UNIT (OVERALL VIEW)



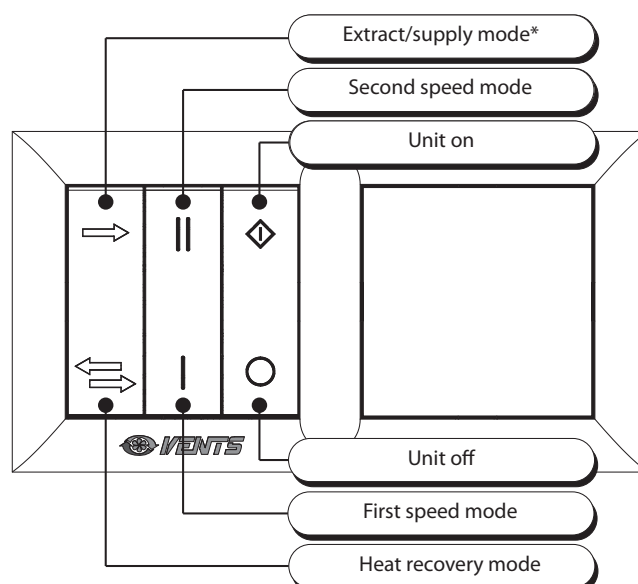
The control and power unit modification type is selected depending on the power mains voltage and power transformer in accordance with the selection table.

Control and power unit name	Transformer parameters			Note
	Power [W]	Voltage [V]		
		Input	Output	
Control unit KVR-T12 (230 V / 50 Hz)	12	230/50 Hz	12	Connection up to 4 units
Control unit KVR-T12 (120 V / 60 Hz)	12	120/60 Hz	12	Connection up to 4 units
Control panel KVR + transformer TRF 220/12-12	12	230/50 Hz	12	Connection up to 4 units
Control panel KVR + transformer TRF 120/12-12	12	120/60 Hz	12	Connection up to 4 units
Control panel KVR + transformer TRF 220/12-40	40	230/50 Hz	12	Connection up to 12 units
Control panel KVR + transformer TRF 120/12-40	40	120/60 Hz	12	Connection up to 12 units

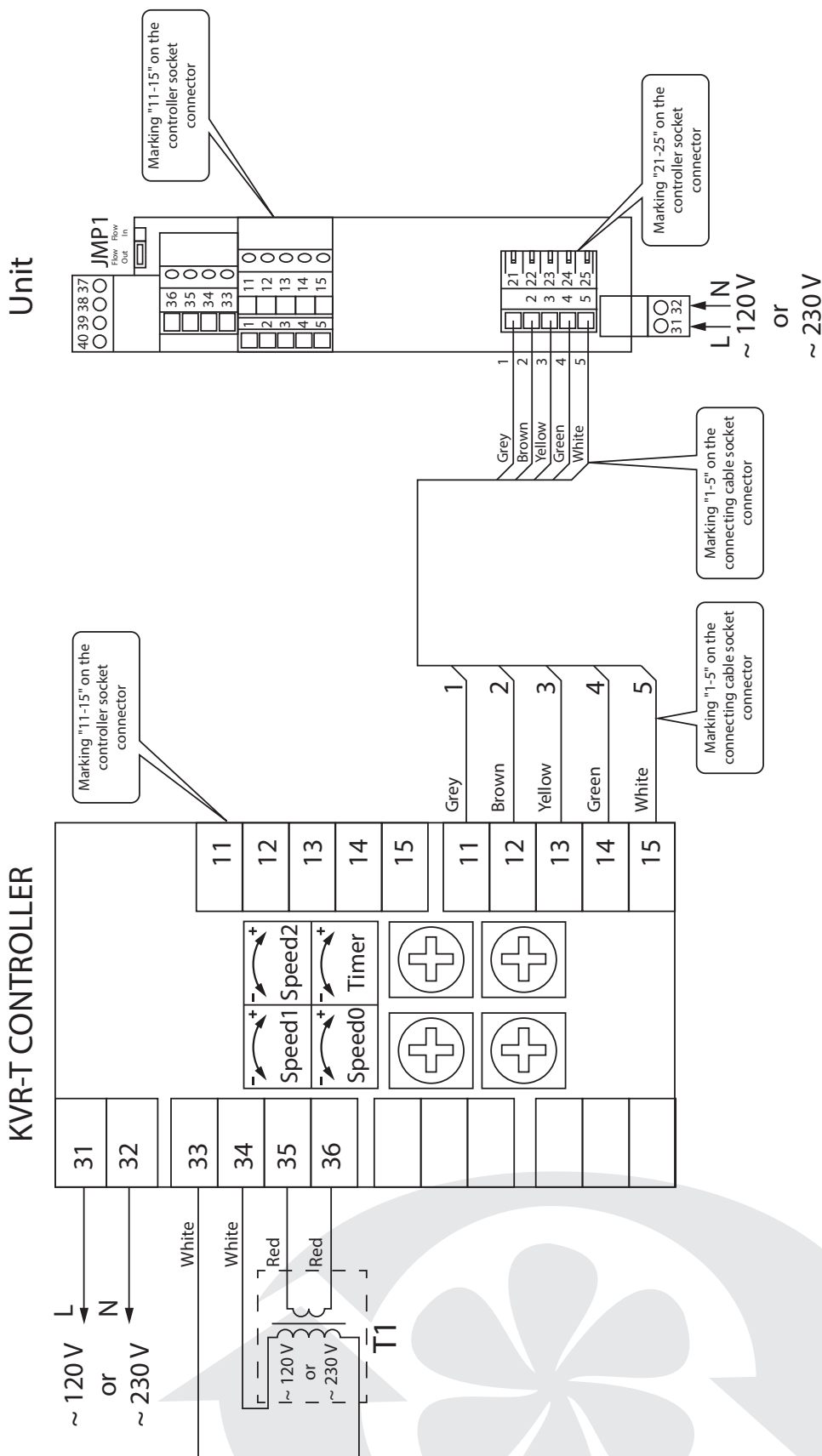
The control and power unit is used to set one of four operation modes of the unit:

1. Ventilation mode (air extract / air supply)\* at first speed with air capacity 25 m<sup>3</sup>/h (14.7 CFM).
2. Ventilation mode (air extract / air supply)\* at second speed with air capacity 50 m<sup>3</sup>/h (29.4 CFM).
3. Reverse (heat recovery) operation at first speed with air capacity 25 m<sup>3</sup>/h (14.7 CFM). The ventilator changes operation mode (air extract / air supply) every 70 seconds.
4. Reverse (heat recovery) operation at second speed with air capacity 50 m<sup>3</sup>/h (29.4 CFM). The ventilator changes operation mode (air extract / air supply) every 70 seconds.

\* - air flow direction depends on position of the jumper JMP1 on the circuit board. The jumper is set to provide supply mode by default, fig. 13.



# GENERAL WIRING DIAGRAM TO KVR CONTROLLER



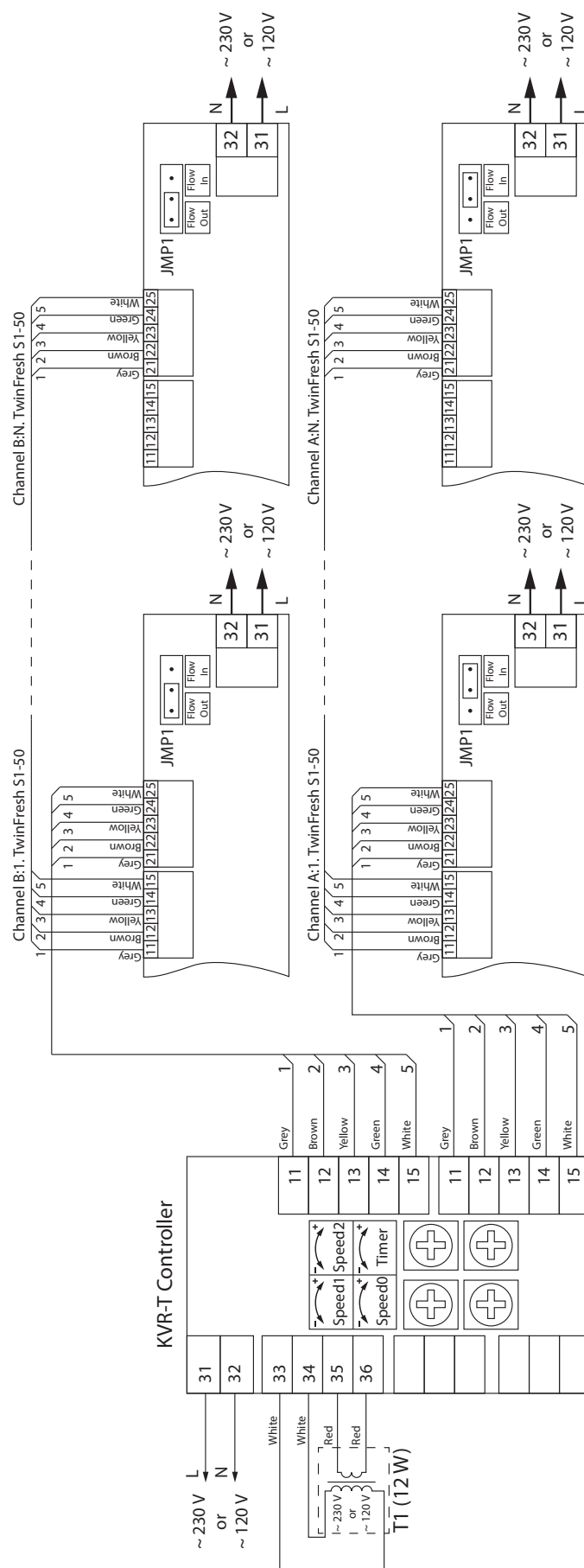
To connect the ventilators to the KVR controller two channels are used. In ventilation mode all the units operate either in extract mode (in case of setting the JMP1 jumper on the unit circuit board to Flow out position) or in supply mode (in case of setting the jumper JMP1 on the unit circuit board to Flow in position).

For easy electric installations a five-wire cable is used. The wire colour marking is in compliance with the colour of the supplied wires.

The minimum conductor cross section is  $0.25\text{ mm}^2$  (23 AWG). Type and power of the step-down transformer T1 is selected on the assumption that to provide operation of a single unit the alternating voltage 12 V is required and the single unit power consumption is 3 W.

Power supply 230 V / 50 Hz (or 120 V / 60 Hz) must be provided both to the control unit KVR-T and to the ventilator socket connectors 31-32.

# GENERAL WIRING DIAGRAM FOR CONNECTION OF UP TO 4 UNITS TO THE CONTROLLER



This wiring diagram enables a series connection from 2 up to 4 units. For this wiring type a control and power unit and 12 W transformer are required.

**Separate power supply (230 V / 50 Hz or 120 V / 60 Hz) must be provided both to the control unit and to each ventilator (31-32 socket connectors).**

Electric connection sequence:

Connect the second ventilator A3-no.2 (socket connectors A2: 21...25) to the first one (socket connectors A2: 11...15) with the connecting cable supplied with the second ventilator. Connect the other ventilators in the same way (up to 12 items).

Power to the transformer unit is supplied through the pre-wired power cable with a plug.





**DISCONNECT THE VENTILATOR FROM POWER SUPPLY BEFORE ANY MAINTENANCE OPERATION WITH THE UNIT.**

Maintenance of the unit means regular cleaning of the unit surfaces from dust and cleaning or replacement of the unit filters.

#### UNIT MAINTENANCE

##### 1. Fan maintenance (once per year).

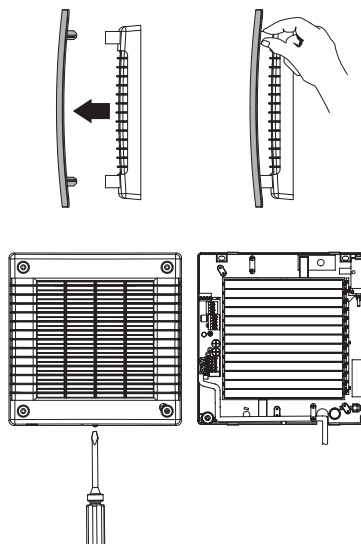
Remove the decorative front panel.

Remove the self-drilling screw in the fan bottom.

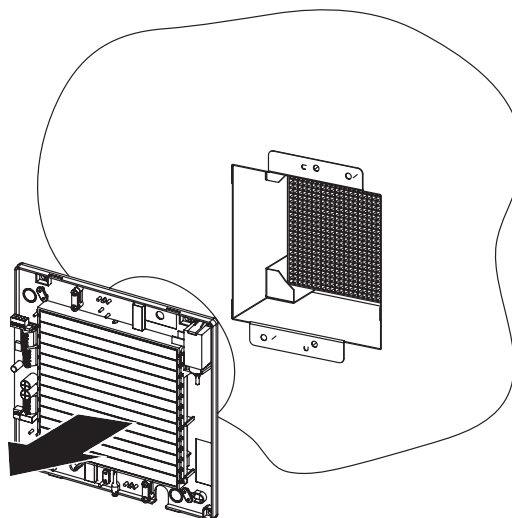
Remove the fan cover.

Disconnect the signal and power cables and remove those from the recess.

Do not damage the cable while disconnecting it.



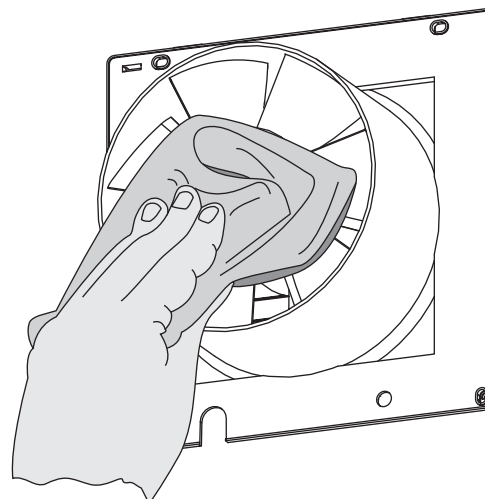
Pull the fan block and remove it.



Clean the impeller blades.

Clean the fan from dust with a soft brush, cloth or a vacuum cleaner.

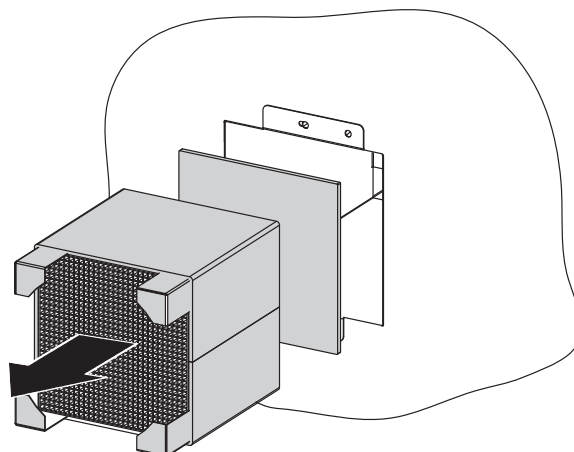
Do not use water, abrasive detergents, solvents, sharp objects. The impeller blades must be cleaned once in year.



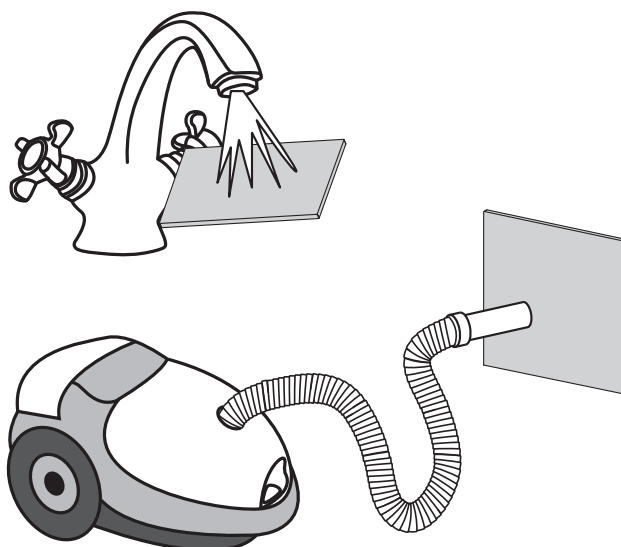


## 2. Heat exchanger and filter maintenance (3-4 times per year).

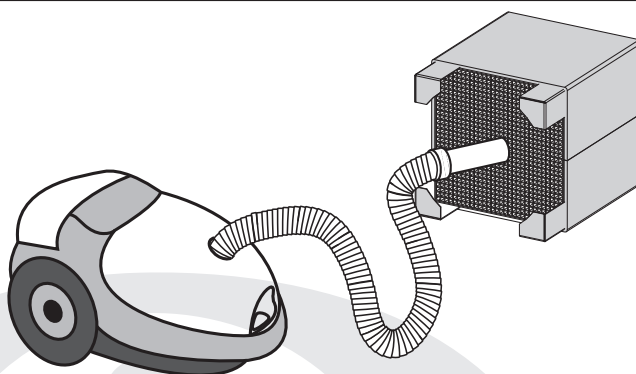
Pull the heat exchanger to remove it from the air duct. Be careful not to let it fall down.  
Remove the filter after the heat exchanger.



Clean the filter as often as it gets soiled, but at least 3-4 times a year.  
Flush the filter. Re-install the dry filter into the telescopic duct.  
Cleaning with a vacuum cleaner is allowed.  
The filter rated service life is 3 years.  
Contact the Seller for spare filters.

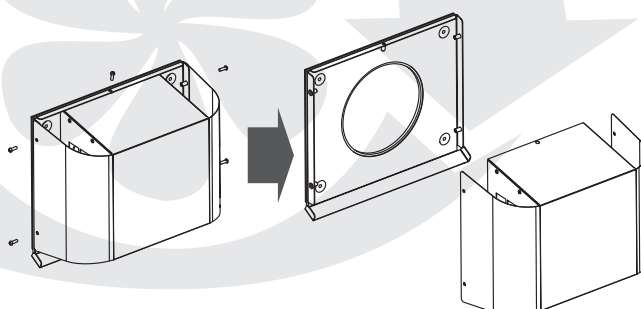


Some dust can get accumulated on the heat exchanger block even in case of regular filter maintenance.  
To maintain the high heat recovery efficiency, regular heat exchanger cleaning is required.  
Clean the heat exchanger with a vacuum cleaner at least once per year.



## 3. Outer hood maintenance (once per year).

The outer hood grill may get clogged with leaves and other objects that reduce the unit performance.  
Check the outer hood twice a year and clean as required.  
Loosen 5 screws, remove the outer hood it. Take off the upper part of the outer hood and clean the hood and the connected air duct.



## TROUBLESHOOTING AND FAULT HANDLING

### Possible faults and troubleshooting

Fault	Possible reasons.	Fault handling
The fan does not start up.	No power supply.	Make sure of correct power supply, otherwise troubleshoot the connection error.
	Motor is jammed, the impeller are clogged.	Turn the unit off. Troubleshoot the motor jam and the impeller clogging. Clean the blades. Restart the unit.
Automatic switch tripping.	Overcurrent resulted from short circuit in the electric circuit.	Turn the unit off. Contact the service centre.
Low air flow.	Low set fan speed.	Set higher speed.
	The filter, the fan or the heat exchanger are dirty.	Clean or replace the filter, clean the fan and the heat exchanger.
High noise, vibration.	The impeller is soiled.	Clean the impeller.
	Loose screw connection of the unit casing or the ventilation hood.	Tighten the screws of the unit or the outer ventilation hood.

## STORAGE AND TRANSPORTATION RULES

Store the unit in the manufacturer's original packing box in a dry ventilated premise at the temperatures from +10°C (14°F) up to +40°C (104°F) and relative humidity less than 60% (at the temperature +25°C (77°F)).

Storage environment must not contain aggressive vapours and chemical mixtures provoking corrosion, insulation and sealing deformation.

Use hoist machinery for handling and storage operations to prevent the unit damage in consequence of falling or excessive oscillation. Fulfil the handling requirements applicable for the applicable freight type.

Transportation with any vehicle type is allowed provided that the goods are protected against mechanical and weather damage.

Avoid any mechanical shocks and strokes during handling operations.

## MANUFACTURER'S WARRANTY

Manufacturer hereby guarantees normal performance of the unit during two years from the date of retail sale provided compliance with transport, storage, mounting and operation regulations. In case of no confirmation of sales date the warranty period is calculated from the production date.

In case of failures in the unit operation during the warranty period the manufacturer will accept claims and complaints from a customer only after receiving a technical protocol with a fault description.

The unit damage as a result of unauthorized modifications in the electric circuit diagram is not a warranty case.

For warranty and post-warranty services contact the product manufacturer or the Seller. In case of warranty claim please submit the present user's manual with a stamp of the trade company, filled connection certificate and the warranty card.

Both warranty and post-warranty services are carried out at the manufacturing facility.

In case of warranty claim please provide the filled guarantee card with the trade company stamp and the user manual.



**IN CASE OF A WARRANTY CLAIM PLEASE PROVIDE A COMPLETED CONNECTION CERTIFICATE AND THE USER'S MANUAL.**



**THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY OR DAMAGES RESULTING FROM THE UNIT MISUSE OR GROSS MECHANICAL INTERFERENCE.  
FOLLOW THE USER'S MANUAL REQUIREMENTS TO ENSURE NON-STOP AND TROUBLE-FREE OPERATION OF THE UNIT.**

### ACCEPTANCE CERTIFICATE

The single-room reversible ventilator TwinFresh S \_\_\_\_ 1-50 \_\_\_\_ has been duly certified as serviceable.

We hereby declare that the product complies with the essential protection requirements of Electromagnetic Council Directive 2004/108/EC, 89/336/EEC and Low Voltage Directive 2006/95/EC, 73/23/EEC and CE-marking Directive 93/68/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

This certificate is issued following test carried out on samples of the product referred to above.

Stamp of the acceptance inspector \_\_\_\_\_

Date of production \_\_\_\_\_

#### Sold by

Name of the trade company, stamp of the shop \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Date of sale \_\_\_\_\_

### CONNECTION CERTIFICATE

The single-room reversible ventilator TwinFresh S \_\_\_\_ 1-50 has been connected to power mains pursuant to the guidelines of the user's operation manual by the electrician:

Company name \_\_\_\_\_

Electrician's name \_\_\_\_\_

Date \_\_\_\_\_ Signature \_\_\_\_\_

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### WARRANTY CARD

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